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Factors Associated with Managerial Innovation in Public Human Service Organizations

Abstract

Pressures from the New Public Management movement have challenged human service managers to adapt to changing environments through innovation. Yet, no research has examined managerial innovation along the spectrum of lower- to upper-level managers. This study analyzed survey data of 466 public human service managers to examine the relationship between individual characteristics and managerial innovation. Results showed that 38% of managers took an innovative approach to their work, and the characteristics of perceived responsiveness to change and evidence-informed practice network involvement were significantly associated with managerial innovation. Managerial innovation could be promoted through evidence-based networks and communities of learning.

Key Words: Innovation, human service organizations, management, communities of learning

Introduction

Technological advances, increased competition for public and private sector support resulting from the Great Recession, legislative demands, and demographic changes have underscored the need for human service organizations (HSOs) to innovate as a way to improve performance and ensure accountability for public funding (Agars, Kaufman, and Locke 2008; Walker 2004). To achieve these goals, HSOs are being challenged to overcome traditional organizational structures and processes characterized by bureaucracy, inertia, and risk aversion (Borins 2001; Borins 2014). Thus, whether in traditional bureaucratic or more market-oriented settings, public managers in human service settings are increasingly expected to increase the efficiency of services provided, implement evidence-informed practices and outcome-oriented programs, engage in performance measurement, and ultimately ensure that public services are delivered effectively and equitably (Heinrich 2007).

These pressures have challenged public managers in the human services and in other sectors to not only manage their work environments and motivate their workforce in response to change but also to engage in innovative work (Osborne and Brown 2011). In this paper, we focus on managerial innovation in daily practice, conceptualized as the managerial search for and use of new ideas to enhance workplace structures and processes (Patterson et al. 2009; Hammond et al. 2011). Specifically, we define managerial innovation as an ‘intentional and proactive process that involves the generation and practical adoption and spread of new and creative ideas, which aim to produce a qualitative change in a specific context’ (Sørensen and Torfing 2011, 849).

Our focus on innovation at the level of the individual manager differs from organizationally-focused approaches to public sector innovation. Public management research has approached organizational innovation from an examination of firm-level and environmental

factors that promote innovation in organizations (e.g., Borins 2014); systems-based research on the use of crowdsourcing to spark organizational innovation (Collm and Schedler 2014); and research that links managerial characteristics such as professional autonomy with the development of innovation-focused organizational cultures (Wynen et al. 2014).

We also draw a distinction between the processes of managerial innovation and evidence-informed practice, including the adoption and diffusion of specific evidence-based practices (Walker, Damanpour, and Devece 2010). Although potentially complementary, these two processes are distinct. For example, innovative managers focus on finding new information and ideas to enhance problem-solving during their work routine, whereas evidence-informed managers use available research and organizational data to identify and refine new service technologies and programs (McBeath et al. 2015). Managers' search for new ideas may serve as a starting point for identifying and using available scientific knowledge, organizational administrative data, and other sources of information in order to develop and test new strategies for addressing service delivery challenges (Briggs and McBeath 2009; McBeath et al. 2015; Kovner 2014).

The view of public managers as innovators reflects a New Public Management (NPM) interest in reducing bureaucracy and experimenting with market-based models of service delivery. Proponents of this perspective argue that public managers can promote organizational innovation by adapting private sector tools and features that ostensibly lead to improved performance. An NPM orientation to the managerial role entails a more entrepreneurial role of creating the conditions within organizational environments to introduce and realize new ideas (Barzelay, Armajani, and Altshuler 1992; Meijer 2014). This shift in the managerial role is evident in Borins's (2001) study of public organizations that found that public sector innovations

are derived less from political or executive influences and more from managers operating either alone or in concert with frontline staff (Borins 2001). This research suggests that the managerial search for efficiencies in service delivery and the incorporation of decentralized and leaner hierarchies of decision-making may improve the position of public organizations that seek to become innovative enterprises.

Understanding the conditions under which human service managers innovate by searching for and introducing new ideas into practice may therefore inform research on public sector organizational performance. It is important to gain an understanding of the role of managers in the innovation process who have the responsibility to develop organizational initiatives and overseeing organizational reforms (Birken et al. 2013). This line of research ultimately seeks to increase our understanding of the characteristics of innovative public managers, and how managerial innovation could be promoted to improve the performance of public sector organizations.

The current study sought to answer the following research questions: 1) How frequently do managers take an innovative approach to their work in public HSOs, and are there demographic and attitudinal differences in the characteristics of managers who are more vs. less innovative?; and 2) What are the individual behavioral and motivational characteristics that are associated with managerial innovativeness? To answer these questions, we used quantitative survey data from a sample of supervisors, middle managers, and administrators from public HSOs located in the San Francisco Bay Area. Before we describe our study methodology, we first place managerial innovation in the public human service context.

Managerial Innovation in Public HSO Contexts

In the human service sector, managerial efforts to introduce innovation into daily work

routines may be challenged at different levels of practice. Externally, efforts to change organizational structures and processes may be affected by pressures and opportunities driven by public scrutiny, accountability requirements, and compliance with the demands of public funders, regulatory agencies, and legislative bodies (Jaskyte 2010). These institutional pressures are in great part designed to influence HSOs' policy implementation, managerial practices, and service delivery. Compliance with these external expectations may provide legitimacy to the agencies and in turn may lead to additional resources (Hasenfeld 2010). However, these pressures may also hinder managers' efforts to alter organizational policies and programs in novel ways.

Managerial efforts to innovate may also be affected by the technical environment surrounding frontline human service delivery. For example, one characteristic of the human services is its high level of uncertainty in regards to service outcomes due to the indeterminate nature of work conditions (Hasenfeld 2010) as well as the role of consumers as 'active participants in the service experience [who are] largely responsible for the changes sought by the agency' (Patti 2000, 15). These core dimensions of human service delivery increase the uncertainty associated with managerial decision-making, and thus the risk managers and their organizations may bear in attempting programmatic change. For example, managers may not be able to determine with confidence how a new program will perform in a particular community setting. The resulting impact of program activities on consumers may be difficult to forecast, thereby limiting the ability of managers to judge the relative merits of an innovation in relation to current service models. In general, uncertainty has been shown to promote pessimistic judgement about the benefits of an action, and to increase avoidance of risk-taking (Han et al. 2009; Ellsberg 1961). The overall effect in the human services may be 'ambiguity aversion' (Ellsberg

1961; Fox and Tversky 1995) and avoidance of managerial innovation (Hasenfeld 2010).

Despite these challenges, the notion of an inhospitable public sector for managerial innovation has been countered by examples of innovation such as new approaches to frontline service programming, performance measurement, employment policies, and workforce development practices (Sørensen and Torfing 2011; Bartlett and Dibben 2002; Walker 2003). The emerging question is how to identify innovative managers who, despite multiple challenges inherent to the human service sector, are able to initiate and/or support change. The public management literature has provided insight into the organizational and individual factors that facilitate managerial innovation.

Organizational Characteristics that Facilitate Innovation

A review of the literature suggests that innovation within public organizations can be understood as a function of specific organizational characteristics. Scholars have underscored the importance of the work environment in facilitating or hindering organizational change (Klein and Sorra 1996). Additionally, characteristics such as strategic style, organizational structure, and cultural norms and values can shape an organization's ability to learn from experiences, adopt new ways of doing business, and ultimately adapt to change (Martins and Terblanche 2003; Kontoghiorghes, Awbre, and Feurig 2005).

The study of organizational contexts is relevant to the understanding of innovative management because enabling contexts have been linked to higher individual motivation to pursue innovative approaches to work by providing a safe environment for workers to experiment (Hammond et al. 2011). Research has also shown that organizations with strong administrative capacity, measured as the number of managers in an organization, as well as organizations engaging in collaborative networks that promote learning, are more likely to adopt

innovations (Walker 2014).

Managerial Factors that Influence Innovation

There is a growing literature on the role of individuals in public innovation. Scholars have identified individual-level characteristics that predispose some managers to be able to incorporate new information into their daily work (Patterson et al. 2009). Practitioner characteristics such as openness to new ideas and having a positive attitude toward change have been associated with higher use of new information (Damanpour and Schneider 2009; Austin, Dal Santo, and Lee 2012). Studies have also found that managers in positions of authority, with strong professional networks, and with access to organizational resources are more active innovators (Wilson 1966; Hage and Dewar 1973; Rycroft-Malone et al. 2002).

This view of innovative managers as embedded within strong, well-supported professional networks has been supported by research showing that joint action among motivated workers is more likely to lead to innovative change (Borins 2014; Barzelay, Armajani, and Altshuler 1992; Denhardt and Denhardt 2000). In this regard, scholars have argued that individuals with networking skills are more likely to be effective public entrepreneurs (Williams 2002; Beinecke 2009). In short, managers who share novel ideas with like-minded colleagues may be able to build new knowledge, coordinate actions, and ultimately be more likely to implement innovative practices within and across organizations (Rogers 2010).

In relation to this perspective, a growing number of research efforts have focused on clarifying the importance of social supports within HSOs for fostering managerial learning and supporting organizational change, under the premise that individual managers may require training, mentoring, and administrative sanction to engage in experimentation (McBeath and Austin 2014). A critical support is the availability of knowledge sharing teams that facilitate the

locating, appraising, and use of diverse types of evidence to support managerial decision-making (Austin, Dal Santo, and Lee 2012). The connection between evidence-informed management practice and the social network aspects of human service innovation is the development of these communities of learning. It is within learning communities that managers may be able to discuss new ideas, paving the way to greater evidence use and interest in the implementation of evidence-informed practices (McBeath et al. 2015).

In summary, a review of the literature suggests that managers play a key role in ensuring that new tasks are accomplished, allocating resources within and across work units to stimulate organizational reforms, and promoting change throughout the organization. However, recent studies identify several limitations related to the use of aggregated managerial and frontline worker samples, over reliance on case study research designs, and the lack of individual-level measures of managerial innovation. This study contributes to the literature by using a sample of human service managers that ranges from executives to supervisors in order to examine both individual managerial characteristics and the perceptions of managers about suitability of their informal work networks to introduce and use new ideas.

Methods

Sample and Data Collection

This study examined quantitative data from the Survey of Evidence-Informed Practice in the Human Services conducted in June-July 2013 across 11 county human service departments in the San Francisco (California) region. To answer our research questions, we examined quantitative survey data from a sample of 466 upper- to lower-level managers. This online survey sought to understand how public human service managers use new and existing agency information and other types of evidence (including research) to inform their practice and enhance

services and agency operations. Other survey questions of relevance to the current study were related to how managers approached their daily work, and their connections to work colleagues around evidence-informed practice. A total of 517 of 958 invited employees completed the online survey. As a result, the survey had an estimated 52% response rate, which is considered above average in organizational surveys (Baruch and Holtom 2008). Detailed information on the development of the survey and its administration is provided elsewhere (McBeath et al. 2015).

Measures

Managerial Innovation (Dependent Variable). Respondents were asked to rate the degree to which they agreed with the following two statements concerning how they approach their work: ‘I often search for new ideas to use in my work’; and ‘I make use of new ideas when people send me interesting information.’ Each survey question was designed to assess practitioners’ initiation/ideation and use of new ideas in their work (Patterson et al. 2009; Damanpour and Schneider 2006). Likert-based response categories for each survey question included ‘1’=‘Strongly Disagree’, ‘2’=‘Slightly Disagree’, ‘3’= ‘Neither Agree Nor Disagree’, ‘4’= ‘Slightly Agree’, and ‘5’= ‘Strongly Agree’. Given the low frequency of responses on some categories of each of these questions, we recoded the 5-point measures into a single binary variable. This outcome variable was coded 1=the manager reported strongly agreeing with both statements and 0=if the manager reported anything other than strong agreement with each statement.

Responsiveness to Change. Respondents were asked to identify which of the following strategies they would use if they noticed a major change in service demand such as a large increase or decline in the county client population (managers were allowed to check multiple strategies): 1) conduct a survey of coworkers; 2) conduct a survey of clients; 3) conduct a survey

of community providers; 4) contact researchers with expertise in the area; 5) review client case records; 6) review agency reports; 7) review research articles and reports; and/or 8) employ another strategy to search for explanations. The number of strategies selected was summed into a count variable, with higher values implying greater managerial agency and responsiveness to organizational change (Golensky and Mulder 2006).

Interest in Professional Training and Development. Respondents were asked whether they would be interested in attending a short program on evidence-informed practice; they were also asked if they would be interested in participating in a part-time degree program (i.e., BA, MSW or PhD) at a local university while continuing to work if they could find the time to attend. Responses to each of these two dichotomous questions were used to create a single binary variable indicating whether the respondent was interested in professional training and development, which was coded 1=if managers responded affirmatively to both questions.

Involvement in Evidence-Informed Practice Networks. Respondents reported on how helpful they found the following strategies for expanding their practice skills: 1) talking to co-workers who have expertise in evidence-informed practice; and 2) learning from co-workers who are currently engaged in evidence-informed practice. Likert-based response categories for each survey question included '1'='Not at All Helpful', '2'='Slightly Helpful', '3'='Somewhat Helpful', '4'='Very Helpful', and '5'='Extremely Helpful'. Given a low frequency of responses on some of the categories, a derived binary variable was constructed and coded 1=the manager perceived their evidence-based work networks to be extremely or very helpful and 0=if the manager reported these networks to be somewhat helpful to not at all helpful for either of the question. Affirmative responses to this dichotomous variable were used to identify those managers who were currently engaged in regular conversations with co-workers around

evidence-based practice, and who were expected to be involved with evidence-based practice networks at work (Rousseau and McCarthy 2007).

Work Role. Practitioners were asked to identify their primary work role, which included: supervisor (referent); middle manager; or administrator (i.e., executive team or administrative support). These variables were included to control for potential differences in managerial capacity to participate in organizational change and involvement in innovative work practices.

Other Covariates. Several variables related to factors known to be associated with innovation were included as covariates. A continuous variable indicating the number of years the respondent had worked in the human service sector was included to account for variation in managers' ability to identify and use new ideas in the workplace based on professional experience (Damanpour and Schneider 2009). Educational level was included to control for differences in the level of training and knowledge needed to introduce new ideas in the workplace (Boyne 2002). This construct was measured as a categorical variable indicating whether the respondent had less than a bachelor's degree, a bachelor's degree (i.e., BSW, BA or BS degree), an MSW degree (referent), or some other master's-level degree. A binary variable measuring gender was included to account for differences in managerial style (Fox and Schuhmann 1999). Finally, a categorical measure of age (<40 years, 40-54 years, or 55<) was included to control for differences in seniority (and potentially differences in innovation participation based on years of organizational experience).

Analysis

Descriptive and bivariate statistics were first used to describe the characteristics of the sample of human service managers and to test for differences in the characteristics of managers who were more vs. less innovative. Given survey item nonresponse, multiple imputation was

implemented using the multivariate normal imputation method to reduce potential bias from missing data and maintain the full analytic sample (Allison 2002; Lee and Carlin 2010). Twenty imputations were used to reduce sampling error and the outcome variable was included in the imputation procedure to maximize the information used during the imputation process (Von Hippel 2007). Availability of data on the dependent variable reduced the analytical sample to 424 managers.

A multivariate regression model examining the proposed associations between individual managerial characteristics and the outcome variable of managerial innovation was then tested. The model included Huber-White robust standard errors to account for potential clustering of responses by the county organization in which managers were located. Two sensitivity tests were then conducted. The linktest specification test did not detect specification errors in the logistic model. Additionally, Hosmer and Lemeshow's Goodness of Fit test was run to test for model fit, which was determined to be satisfactory (Cameron and Trivedi 2009). Phi and biserial correlations between independent variables were all less than $r=0.49$, suggesting that independent and dependent variables were sufficiently distinct to allow them to be incorporated in a multivariate model. The presented multivariate results reflect the imputed dataset. Analyses were conducted using Stata 13.0 (StataCorp 2011).

Results

Descriptive and Bivariate Results

Over half of managers (55%) strongly agreed that they often search for new ideas to use in their work, and almost half (49%) strongly agreed that they make use of new ideas 'when people send me interesting information'. As shown on Table 1, over a third (38%) of managers reported a self-perception that they take an innovative approach to their work. Managers noted

that they would use an average of almost four strategies (mean=3.91, SD=2.25) to respond to a major organizational change. About half (49%) of managers reported an interest in additional professional development, and over half (53%) of managers were involved in an evidence-informed practice network. With respect to managerial background, most respondents were supervisors (42%) followed by middle managers (30%) and administrators (28%); managers had on average over 18 years of experience in the human service sector (mean=18.37, SD=9.47). Demographically, the most common degree held by respondents was the MSW (32%), befitting the population of public human service managers from which the sample was drawn; and most managers were female (74%), Caucasian (74%) and between 40-54 years old (54%).

[Table 1 about here]

Bivariate comparisons presented in Table 2 provide a descriptive profile of innovative vs. less-innovative managers. Overall, innovative managers used a greater number of strategies to respond to change, as compared to less-innovative managers (4.54 vs. 3.52). Greater proportions of innovative managers were also involved in an evidence-informed practice network at their workplace (63% vs. 46%), and had an administrative role (35% vs. 24%), as compared with less-innovative managers respectively. However, the two groups did not differ along other factors, including their experience in the human service sector, formal organizational role, or any demographic characteristics.

[Table 2 about here]

Multivariate Results

Table 3 presents the results of the multivariate logistic regression analysis. Results suggest that holding other factors constant, managers who were more responsive to organizational change had higher odds of approaching their work in an innovative manner (OR=

1.27, $p < 0.001$). Also, managers who were involved in an evidence-informed practice network were more likely to take an innovative approach to their work ($OR = 1.61$, $p < 0.05$). However, other factors pertaining to the tenure of managers in the human services (i.e., number of years employed in HSOs), their organizational role (e.g., supervisor), or their personal characteristics (e.g. gender and age) were not significantly different by level of managerial innovation (i.e., strongly vs less than strongly innovative).

[Table 3 about here]

Discussion

The rise of the New Public Management movement has emphasized the importance of understanding how public managers develop innovative, high-performing public organizations. However, there has been little empirical attention given to the level and drivers of managerial innovation in the human service sector. We sought to gain a better understanding of the level of innovative work practices among public managers in HSOs as well as identify individual attitudinal predictors associated with managerial innovativeness.

Our study was characterized by two efforts. First, we sought to conceptualize innovation in management practice as the search for and integration of new ideas into daily work practices, thereby providing a complement to studies that examined innovation at the organizational level (Borins, 2014) and viewed innovation as the diffusion and adoption of best practices (Walker, Damanpour, and Devece 2010). Second, we focused on managerial innovation in the human service sector given its importance in addressing heightened performance and accountability expectations in the wake of the Great Recession (Lewis, Packard, and Lewis 2011).

We found that over a third of respondents (38%) could be classified as approaching their daily work in an innovative fashion. Given that managers face many challenges in developing

innovative approaches to their work, we view this prevalence rate for innovation-minded managers as being quite robust. There are at least two major challenges in public HSOs that may discourage innovation efforts: (1) the high degree of uncertainty in delivering human services that can increase the amount of risk that emerges when seeking to develop and implement innovative programs and policy initiatives, often reinforcing a ‘status quo mentality’ in response to accountability demands/pressures; and (2) external policy and financial compliance demands that can prevent changes in existing human service processes. While our study did not evaluate the level of external institutional pressures and technical uncertainty involved in developing and implementing human service programs as perceived by managers, we interpret our 38% finding to suggest that public human service managers may perceive some incentives to engage in innovation. The management level of attention to the search for and application of new ideas found in this study may enhance the process of improving HSO performance, given that managerial innovation can lead to experimentation either formally (e.g., the development of innovative programs) or informally (e.g., the growth of policy workarounds) (Campbell 2012).

Bivariate and multivariate findings suggested that managerial innovation was associated with the degree of managerial responsiveness to organizational change and to the degree of managerial involvement in evidence-informed practice work networks. The first of these findings alludes to the link between the literatures on organizational change and practitioner innovation (Schmid 2009). We see two possible connections between these literatures, each of which may benefit from further research. First, we wonder whether there may be an attitudinal dimension of managerial innovation, in which managers who have the ability to reframe organizational issues within an organizational change and improvement process may be more likely to innovate. Second, we wonder if responsiveness to change and innovation-mindedness may be linked to

managerial agency and discretion. In this case managers with a greater sense of personal ability to adapt to change, belief in their ability to influence the organizational environment, and professional autonomy may be more likely to innovate.

The second of these bivariate and multivariate findings supports the literature on evidence-informed management in the human services related to practitioners who seek out work colleagues to identify relevant information to resolve organizational problems may also be more likely to express interest in innovation-minded practice (Austin, Dal Santo, and Lee 2012; Briggs and McBeath 2009). These findings also allude to the social context of innovative managerial behavior. That is, innovation may be more likely to occur when managers interact with colleagues who support their efforts. Although the literature on the development of learning communities has emphasized the role of social support in supporting organizational learning (Austin, Dal Santo, and Lee 2012), our findings point to the potential benefit of fostering peer learning through evidence-informed practice networks for supporting managers in seeking out alternatives to the status quo. Further research on this relationship could examine the characteristics of learning communities that support managerial innovation.

In contrast, the factors that were not found to be associated with innovative managerial behaviors included the uniqueness of their organizational role, individual interest in professional development, and years of experience in the human services. Taken as a whole, these non-significant findings suggest that innovation may not be concentrated at a particular managerial level or among more or less experienced workers. These findings suggest the need to question the assumption that innovative thinking is more likely to occur among younger, less tenured, and less institutionally embedded practitioners or, alternatively, among senior administrative executives whose organizational experience allows them to more easily propose and implement

programmatic or organizational reforms. This line of thinking y also suggests the presence of external barriers to innovation that might affect all workers within HSOs regardless of their formal role and status. Further research on these lines of inquiry is needed.

These findings need to be understood within the context of a number of study limitations. First, due to the online survey format, the perceptions of respondents about their behavior and attitudes may have created opportunities for social desirability bias. In particular, managers may have rated themselves to be more innovative than they were in practice. Second, despite our efforts to develop dependent and predictor variables from multiple measures, our survey lacked multidimensional measures on key constructs, suggesting that measurement bias may have been present in our models that hampered our ability to determine a significant effect if it was indeed present. Third, for our measure of responsiveness to change, some managers may have endorsed a single strategy because of its perceived effectiveness or due to an individual preference for a single strategic approach to organizational change. Finally, because these data were drawn from a cross-sectional survey, the non-causal research design did not allow us to develop and test causal propositions. Thus, all significant findings presented here are associational in nature, and call for further testing using either longitudinal datasets or data drawn from more robust research designs.

Conclusion

Through an integrated view of the literatures on organizational change, practitioner innovation, and evidence-informed management, we examined the individual motivational and behavioral factors that influence managerial innovation in public HSOs. Our main findings suggest that managers who are more responsive to organizational change and seek out peers who are invested in evidence-informed management practice are more likely to be engaged in the

search for and use of new approaches to responding to current organizational dilemmas.

Therefore, managerial innovation in HSOs may therefore be supported by: 1) identifying practitioners who are responsive to organizational reform and 2) promoting the development of communities of learning that link evidence-minded and innovation-minded practitioners.

Overall, study findings support the need for additional research on the characteristics and activities of innovative public managers in order to identify their contributions to organizational change and organizational performance.

Tables

Table 1. Descriptive Characteristics of Public Managers

Table 2. Manager Profiles by Level of Managerial Innovation

Table 3. Multivariate Logistic Regression Models Predicting Managerial Innovativeness

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Table 1. Descriptive Characteristics of Public Managers

	Mean / %	SD	Min	Max
Dependent Variable				
Managerial innovation	38%		0	1
Individual Characteristics				
Responsiveness to change	3.91	2.25	0	8
Interest in professional training and development	49%		0	1
Involvement in evidence-informed practice networks	53%		0	1
Work role				
Supervisor (referent)	42%		0	1
Middle management	30%		0	1
Administrative role	28%		0	1
Covariates				
Number of years employed in the human service sector	18.37	9.47	0	44
Education				
Bachelor degree or less	16%		0	1
Bachelor degree	24%		0	1
Master's degree	25%		0	1
Masters of Social Work (MSW)	32%		0	1
Gender: Female	74%		0	1
Race: White	54%		0	1
Age				
Less than 40 years of age	16%		0	1
Between 40 and 54 years of age	54%		0	1
Age 55 years old and older (referent)	30%		0	1

Note: The sample size for variables ranged from 383-424.

Table 2. Manager Profiles by Level of Managerial Innovation

	<u>Strongly Innovative[±]</u>	<u>Less Than Strongly Innovative[±]</u>	
	<u>Mean (SD)</u> <u>%</u>	<u>Mean (SD)</u> <u>%</u>	<u>P-value</u>
Individual Characteristics			
Responsiveness to change	4.54 (2.00)	3.52 (1.92)	0.000***
Interest in professional training and development	53%	46%	0.160
Involvement in evidence-informed practice networks	63%	46%	0.001**
Work role			
Supervisor (referent)	40%	43%	0.488
Middle management	25%	33%	0.104
Administrative role	35%	24%	0.016*
Covariates			
Number of years employed in the human service sector	18.23 (9.46)	18.45 (9.50)	0.817
Education			
Bachelor degree or less	16%	16%	0.947
Bachelor degree	21%	26%	0.223
Master's degree	26%	24%	0.542
Masters of Social Work (MSW)	32%	32%	0.952
Gender: Female	70%	76%	0.216
Race: White	59%	51%	0.095
Age			
Less than 40 years of age	15%	17%	0.490
Between 40 and 54 years of age	53%	54%	0.786
Age 55 years old and older (referent)	32%	28%	0.393

Note: *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$. [±]Where 1-3 based answer categories in the survey question were coded as 'Less than Strongly Innovative' and 4-5 categories as 'Strongly Innovative'

Table 3. Multivariate Logistic Regression Models Predicting Managerial Innovativeness

	<u>OR</u>	<u>SE</u>	<u>P> t </u>	<u>95% CI</u>	
Individual Characteristics					
Responsiveness to change	1.27	0.07	***	1.14	1.43
Interest in professional training and development	1.18	0.17		0.89	1.52
Involvement in evidence-informed practice networks	1.61	0.30	*	1.12	2.32
Work role					
Middle management	0.74	0.20		0.44	1.26
Administrative role	1.23	0.46		0.59	2.56
Covariates					
Number of years employed in the human service sector	0.98	0.01		0.96	1.00
Education					
Less than bachelor degree	1.17	0.32		0.68	2.01
Bachelor degree	0.78	0.26		0.41	1.41
Other master’s degree	0.87	0.24		0.51	1.51
Gender: Female	0.76	0.22		0.44	1.33
Race: White	1.44	0.35		0.90	2.31
Age					
Less than 40 years of age	0.58	0.20		0.29	1.13
Between 40 and 54 years of age	0.72	0.17		0.45	1.15

Note: N=424. Average relative variance increase (RVI)=0.31. *=p<0.05, **=p<0.01, ***=p<0.001